

REMARKS

Claims 35-46 are pending in this application.

In the final Office Action dated September 16, 2003, under 35 U.S.C. § 103(a), the Examiner rejected (1) claims 35-39, 43 and 45-46 as being obvious over U.S. Patent No. 5,659,330 (Sheridon) in view of U.S. Patent No. 6,473,072 B1 (Comiskey, et al.) and further in view of U.S. Patent No. 5,181,016 (Lee) and U.S. Patent No. 5,165,013 (Faris); and (2) claim 44 as being obvious over the Sheridan, Comiskey et al., Lee and Faris patents in further view of U.S. Patent No. 6,377,249 (Mumford).

Applicant thanks the Examiner for his indication that claims 40-42 contain allowable subject matter, although they have been objected to as being dependent on a rejected base claim. Applicant believes, however, that claims 35-39 and 43-46 are also allowable and urges the Examiner to reconsider his rejections.

Statement of the Substance of the Interview

On December 12, the undersigned attorney and Applicant conducted a telephone interview regarding the Examiner's rejections. Applicant first thanks the Examiner for the courtesies extended during this interview and for his time and consideration.

During this interview, the undersigned attorney and Applicant reviewed with the Examiner the four cited prior art references cited in the rejections, discussed the particular features of the claims that are not disclosed or suggested in any of the references, and argued in detail why the references cited by the Examiner do not render the invention claimed in claims 35-39 and 43-46 obvious. It is Applicant's position that the Examiner's rejections are based upon a misunderstanding of the major differences between the claimed invention and the cited prior art. Applicant sets forth below Applicant's arguments as discussed in the interview.

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Arguments

Applicant's invention as claimed relates to liquid droplets that are induced to move or to change their shape and to thereby create electrowetting and electrostatic screen display systems, color displays and transmission means. The claimed invention uses the controlled movement or shape-manipulation of light-transmissive liquid droplets to refract or redirect light onto selected areas of a plurality multi-colored light filters that are associated with each droplet. In this way, the droplets in Applicant's claimed device act as optical lenses -- *to change the direction of light passing through them and to direct that light onto external color filters*, thereby changing the color of light emerging from the display.

As set forth in claim 35, Applicant's invention requires "one or more measures of a light transmissive liquid" as well as "a plurality of multi-colored light filters comprising a plurality of differently-colored elements being associated with each measure of liquid". Applicant's invention also requires "inducing a change in the location or shape of said affected liquid measures, and thereby causing light passing through said liquid measures to be directed onto or through selected colored areas of said multi-colored light filters".

In contrast to the prior art cited by the Examiner, the droplets in Applicant's claimed device are not a media that incorporates any color or any visual indicia on or within them. None of the references cited, either individually or in combination, contain any reference to the use of droplets to redirect light onto external multi-color filters. Furthermore, even a combination of the cited references would not result in a display system that uses clear droplets to divert light onto selected color areas of multi-colored filters.

The Examiner cites Sheridan as teaching a display device comprising "causing light passing through liquid measures to be directed onto or through selected areas". Applicants respectfully point out to the Examiner that this is simply incorrect and untrue -- Sheridan does not cause "light passing through liquid measures" to be directed onto or through "selected areas". To the contrary, Sheridan's system is almost the opposite of the claimed invention. Sheridan describes an electro-capillary system in which colored droplets of the particular colors desired

for display in a particular pixel are expanded or contracted – and thereby to fill the pixel in question with the desired color. A requirement of Sheridan is that there be at least two droplets in each pixel area, and each of those droplets will be of a different color. Importantly, in Sheridan, the droplets do not direct light onto any other areas, and certainly not colored filters. Instead, the droplets in Sheridan color the light passing through them so as to provide color pixels to the display, and as such Sheridan teaches away from the claimed invention. Applicant's claimed device does not rely upon using the droplet to itself color the light passing through the droplets, and the droplets in Applicant's claimed device do not incorporate any color to act as a light filter themselves. Therefore, Sheridan is clearly a completely different system than that claimed.

The Examiner also states that Comiskey permits the user to draw in multiple colors using pixilated rear line electrodes. However, Applicant's claimed device bears no relationship at all to the approach used in Comiskey, which describes an electromorphic system that involves the migration of colored particles inside micro-capsules under the influence of an electric field. In Comiskey, solid particles having different colors change their orientation in response to the application of an electric field and thereby display a different color to the viewer. There are no droplets in the Comiskey system, and of course there is no diversion of light onto colored filters either. Therefore, other than being an electronic display system, Comiskey bears no relationship to the claimed invention. In this regard, the Examiner's statement that Comiskey "teaches a light source in the device" is not significant, because almost every form of electronic display incorporates a light source to illuminate the display.

Furthermore, the Examiner states that Lee teaches activation of the stylus to move particular measures of liquid (claim 43) and "to retract the light passing through the system so as to controllably modulate the direction in which the light is emitted from the lamp" (claim 46). However, to the contrary, Lee does not mention anywhere in his patent the use of droplets to change or modulate the direction of light emitted by his system. Instead, Lee describes how, using mirrored surfaces (and, optionally, a permanent lens), he can hide his "holding electrode" area (and the droplet, when it is located there) and how he can widen the angle of view of the display by using a permanent lens. In Lee, droplets are moved to the 'holding electrode' area so

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that they either do or do not obstruct the light in the 'viewing area'. Thus, Lee's system (see cited Figure 3) of either obstructing the light or not obstructing the light is completely different from Applicant's device and thus teaches away from the claimed invention, which relates to dynamically modulating the direction of light by means of moving or shape-distorting a liquid droplet onto a selected area of a multi-colored light filter.

Applicant's invention claims a novel device. As shown in Figures 9A and 9B, a liquid droplet in air (thus, not using two different liquids, but rather fluids) has its shape changed by the application of an electric field which varies in strength across the area of the droplet, thereby inducing the droplet to "want to" move towards the strongest electric field, whereas the hydrophobic properties of the inner surface with which the droplet is in contact induces it to move in the opposite direction. Applicant has thereby achieved a very innovative means of moving the droplet to wherever desired along that plane and simultaneously allowing distortion of the shape of the droplet. By achieving these two functions, Applicant is able to controllably redirect incoming light to whatever color zone of the multi-colored filter is desired.

Applicant's claimed invention is absolutely different from any of the approaches described in the prior art, and none of the cited prior art either discloses or renders obvious the claimed devices. None of the cited references provides or suggests any device having "a plurality of multi-colored light filters comprising a plurality of differently-colored elements being associated with each measure of liquid". None of the cited systems uses or suggests using a plurality of multi-colored filters with a plurality of different colored elements being associated with each droplet. None of the cited references describes use of droplets to selectively divert light onto color filters. None of the cited references even uses or suggests any means at all of controllably diverting light in order to change color. None of the cited systems uses or suggests using droplets to function as liquid lenses.

No matter what combination of ideas and technology from the cited prior art are used, the references could not produce anything like Applicant's claimed invention. The only droplet systems amongst them, Lee and Sheridan, are fundamentally incompatible with diverting light onto color filters. Lee uses droplets to block the light, and Sheridan uses colored droplets to

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change the color of light. These approaches teach away from Applicant's invention, since in Lee and Sheridan there would be no light to emerge from the system or the emerging light would already be colored. In either case, no diversion of light to multi-colored filters is mentioned or suggested.

In this regard, claim 46, which does not employ the dynamic diversion of light by the droplets onto a multicoloured light filter array, is still different from the cited combination, including Lee, because it uses exactly the same method as all the other claims, except that here the droplet is being used to divert light, i.e., dynamically change the direction of the light path, but is not directing that light onto light filters. Instead, the objective here is to simply dynamically change the direction of light without changing its color. The clause of the Lee patent cited by the Examiner does not refer to dynamically changing the direction of light: it refers instead simply to blocking or not blocking the emerging light. The light paths shown in the cited Figure 3 simply illustrate the mirrored surfaces and permanent lens arrangement contemplated by Lee.

Conclusion

Applicant notes that there is no legal or procedural impediment to the Examiner withdrawing his rejection, even after a final rejection. In fact, the Manual of Patent Examining Procedure (MPEP) § 706.07(e) specifically states as follows: "The examiner may withdraw the rejection of finally rejected claims. If new facts or reasons are presented such as to convince the examiner that the previously rejected claims are in fact allowable or patentable in the case of reexamination, then the final rejection should be withdrawn." Accordingly, Applicant respectfully urges the Examiner to reconsider his previous rejections in view of the differences between the claimed invention and the prior art pointed herein.

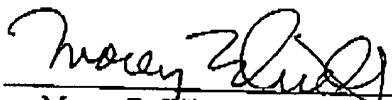
In view of the arguments set forth herein, Applicant believes that all claims are now in condition for allowance. If the Examiner determines that the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney for a telephone interview before another Office Action is issued in the application.

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A favorable action on the merits is earnestly solicited.

Respectfully submitted,

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